IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Patent Application of:
Yoneichi Ikeda, et al.
Conf. No.: 4274 Group Art Unit: 1764
Appln. No.: 10/087,238 Examiner: Tam M. Nguyen
Filing Date: March 1, 2002 Attorney Docket No.: 8305-217US (NP127-1)
Title: Process for Discharging and Transferring Fluidized Particles

DECLARATION UNDER 37 C.F.R. § 1.132

I, Yuichiro Fujiyama, declare and state that:

1. I graduated from Tokyo Institute of Technology, the School of Engineering and was conferred a master's Degree from the Graduate School of Science and Engineering.

I was employed by Nippon Oil Co., Ltd. in 1990. Currently, I am employed by Nippon Oil Corporation, which is the assignee of the above-identified patent application in their Central Technical Research Laboratory, where I have been actively engaged in the research and development of refining processes, focusing on particularly the fluid catalytic cracking.

2. I am well acquainted with the field of a system using a circulating fluidizing layer and therefore conducted experiments described below on behalf of the assignee.

3. I have reviewed the final Office Action dated June 1, 2007, in the above-identified application, and a copy of U. S. Patent No. 3,409,542 (Molstedt) which the Examiner has relied on to reject all of the pending claims under 35 U. S. C. §103 (a). This Declaration has been prepared to address the arguments made by the Examiner in support of the rejections of the claims.

4. It is my understanding that the Examiner is of the following position:

(1) The gas velocity within the intermediated section would be the same or similar when using either a shorter-pipe intermediated section with an elevation angle of about less than 85°or a longer-pipe intermediated section with an elevation angle of 85° or greater;

(2) Molstedt does not specifically disclose that the velocity in the

intermediated cylindrical section is about 0.9 m/s to 7.2 m/s, but since the modified process of Molstedt is similar to the claimed process in terms of gas velocity within the dense bed and the intermediated section, it would be expected that the velocity in the intermediated section of Molstedt would be similar to the claimed velocity; and

(3)Molstedt teaches the velocity at the tapered zone of 25 to 100 ft. /s (7.6 to 30.5 m/s), not the velocity of the intermediated section.

5. In order to overcome the Examiner's rejection, we amended Claim 1 presently on file by further limiting the height of the intermediate cylindrical section to be 1.5 to 4 times the diameter thereof.

6. Further, in order to demonstrate and prove that Molstedt's process fails to break up the clusters of particles within the Intermediated section into a uniformly dispersed state in the gas and consequently achieve a sufficient decrease in pressure change in a high-velocity transferring section (riser), compared to the claimed process, I conducted an additional comparative experiment according to the same manner as that described in Example in the specification. The result in the Molstedt's process was compared to that in the claimed process.

The comparative experiment was carried out using an apparatus constructed by replacing the Intermediate cylindrical section (3) of the inventive apparatus shown in Fig.1 with the middle cone of Molstedt wherein the height-to-diameter ratio (Hp/Dp) is about 1.0, which was actually calculated using the drawing of Molstedt, i.e., a half height of the middle cone and a diameter at that height.

As the result, the average pressure change in the riser portion (ΔP_R) obtained using Molstedt's apparatus was 115.8 Pa, which considerably increased compared with the value (78.4 Pa) obtained using the claimed apparatus.

The dispersed state in the gas of the clusters of the particles within the middle cone was also observed and photographed.

7. In conclusion

It was recognized from the photograph of the Molstedt's apparatus that the clusters of the particles rising from the surface of the dense fluidizing layer were transferred to the lower portion of the riser as they were insufficiently dispersed in the gas because the clusters were accelerated

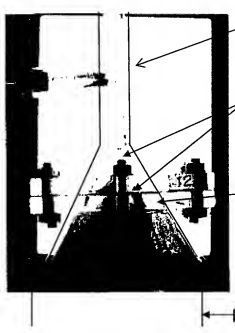
within the tapered sections to reach at least 7.6 m/s of gas velocity at the outlet of the upper truncated cone and resulted in sharp rising through the tapered sections before they were sufficiently broken up. As the result, in the riser the unevenness in concentration of the clusters arose, thereby the pressure change in the riser increased.

On the other hand, it was recognized from the photograph of the claimed apparatus that the large clusters rising from the surface of the dense fluidizing layer was able to stay in the intermediate cylindrical section until they are fully broken up therein and consequently became fine enough to be transferred against those own weights to the riser even at a slow gas velocity of about 0.9 to 7.2 m/s. As the result, they were able to reach the riser in a uniformly dispersed state in the gas and thus the pressure change in the riser became stable in a relatively low level.

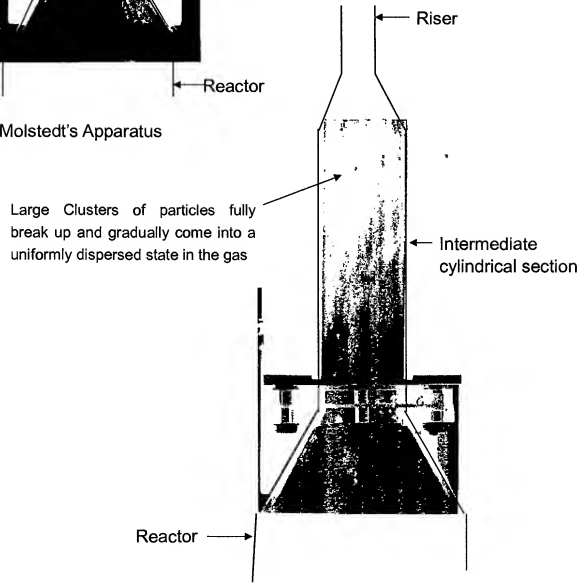
8. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: 12 Sep. 2007 Yuichiro Fujiyama

Yuichiro Fujiyama



Molstedt's Apparatus



Inventive Apparatus